

## CONCEPTUAL ZONING ARTICLE ATM-09.1 AMEND ZONING BYLAW (Two-thirds vote) WIND ENERGY FACILITY

The Planning Board has previously discussed possible zoning bylaw changes for wind power accommodations. This is intended to continue the conversation, and perhaps bring it to the next level.

The following sample bylaws and supplemental information stems from the site

[http://www.mass.gov/?pageID=ocaterminal&L=4&L0=Home&L1=Consumer&L2=Energy%2C+Fuel+%26+Utilities&L3=Renewable+Energy+Programs&sid=Eoca&b=terminalcontent&f=doer\\_programs\\_renew\\_wind-model-zoning&csid=Eoca](http://www.mass.gov/?pageID=ocaterminal&L=4&L0=Home&L1=Consumer&L2=Energy%2C+Fuel+%26+Utilities&L3=Renewable+Energy+Programs&sid=Eoca&b=terminalcontent&f=doer_programs_renew_wind-model-zoning&csid=Eoca) of the Massachusetts Office of Consumer Affairs & Business Regulation, which contains several other helpful documents and links. You can also visit the site

[http://www.mass.gov/?pageID=eoeaterminal&L=4&L0=Home&L1=Energy%2c+Utilities+%26+Clean+Technologies&L2=Renewable+Energy&L3=Wind&sid=Eoea&b=terminalcontent&f=doer\\_renewables\\_wind\\_model\\_zoning\\_by\\_law&csid=Eoea](http://www.mass.gov/?pageID=eoeaterminal&L=4&L0=Home&L1=Energy%2c+Utilities+%26+Clean+Technologies&L2=Renewable+Energy&L3=Wind&sid=Eoea&b=terminalcontent&f=doer_renewables_wind_model_zoning_by_law&csid=Eoea) of the Executive Office of Energy and Environmental Affairs, which contains similar information. There are of course many other sources of information on the subject.

I have word from folks who would know better than I that Acton is probably not in a geographic area where wind conditions are favorable for energy exploitation. However, it seems to me that, until someone has made a detail site specific assessment, one cannot be certain.

Curiously enough Acton allows wind machines under an obscure section of the zoning bylaw, which gives the Board of Appeals sweeping authority to waive height limits. However, the wind machines are limited as accessory to a principal use:

*3.8.3.1 Wind machines designed to serve a PRINCIPAL USE on a LOT may be authorized by special permit from the Board of Appeals provided the Board of Appeals finds that the wind machine is set back from all LOT lines at least the distance equal to the height of the tower from its base on the ground to the highest extension of any part of the wind machine. The Board of Appeals may allow the wind machine to exceed the maximum height limitations established by this Bylaw provided that the setback requirement stated above is met.*

If the Planning Board or the Town want to evaluate and possibly update zoning regulations for wind energy facilities the sample bylaws below could be a start for further discussion. There may not be enough time to fully evaluate and consider standards for large utility-scale installations before the 2009 Annual Town Meeting. Especially the large facilities will involve similar aesthetic challenges as cell phone towers. It may be possible to update or replace current section 3.8.3.1 with modern standards for modern accessory facilities, including facilities that can feed surplus power into the grid, and perhaps allow them by right (instead of a special permit) as the Massachusetts Green Communities Act (Chapter 169 of the Acts of 2008) appears to encourage.

[http://www.windpoweringamerica.gov/pdfs/small\\_wind/small\\_wind\\_guide.pdf](http://www.windpoweringamerica.gov/pdfs/small_wind/small_wind_guide.pdf) is a good primer for reading up on small wind power systems.

Below is first a **SAMPLE BYLAW FOR UTILITY-SCALE INSTALLATION** with some preliminary notes in *bold italic (RB)*. See also <http://www.mass.gov/Eoca/docs/doer/renew/allow-wind-by-permit-companion.pdf> for the same documents with notes from EOEa – Div. of Energy

Resources. Then follows a **SAMPLE BYLAW FOR SMALL WIND ENERGY SYSTEMS** with preliminary notes as above.

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## **Model Amendment to a Zoning Ordinance or By-law: Allowing Wind Facilities by Special Permit**

Prepared by:  
Massachusetts Division of Energy Resources  
Massachusetts Executive Office of Environmental Affairs

### **1.0 Purpose**

The purpose of this by-law is to provide by special permit for the construction and operation of wind facilities and to provide standards for the placement, design, construction, monitoring, modification and removal of wind facilities that address public safety, minimize impacts on scenic, natural and historic resources of the city or town and provide adequate financial assurance for decommissioning.

#### **1.1 Applicability**

This section applies to all utility-scale and on-site wind facilities proposed to be constructed after the effective date of this section. It does not apply to single stand-alone turbines under 60 kilowatts of rated nameplate capacity. *Should evaluate if 60 KW is the appropriate threshold for Acton for differentiation between utility scale and small scale wind energy systems (RB).*

Any physical modifications to existing wind facilities that materially alters the type or increases the size of such facilities or other equipment shall require a special permit.

### **2.0 Definitions**

**Utility-Scale Wind Facility:** A commercial wind facility, where the primary use of the facility is electrical generation to be sold to the wholesale electricity markets.

**On-Site Wind Facility:** A wind project, which is located at a commercial, industrial, agricultural, institutional, or public facility that will consume more than 50% of the electricity generated by the project on-site.

**Height:** The height of a wind turbine measured from natural grade to the tip of the rotor blade at its highest point, or blade-tip height.

**Rated Nameplate Capacity:** The maximum rated output of electric power production equipment. This output is typically specified by the manufacturer with a “nameplate” on the equipment.

**Special Permit Granting Authority:** The special permit granting authority shall be the board of selectmen, city council, board of appeals, planning board, or zoning administrator as designated by zoning ordinance or by-law for the issuance of special permits, or by this section for the issuance of special permits to construct and operate wind facilities. *Recommend Planning Board as SPGA (RB).*

**Substantial Evidence:** Such evidence as a reasonable mind might accept as adequate to support a conclusion.

**Wind Facility:** All equipment, machinery and structures utilized in connection with the conversion of wind to electricity. This includes, but is not limited to, transmission, storage, collection and supply equipment, substations, transformers, service and access roads, and one or more wind turbines.

**Wind Monitoring or Meteorological Tower:** A temporary tower equipped with devices to measure wind speeds and direction, used to determine how much wind power a site can be expected to generate.

**Wind turbine:** A device that converts kinetic wind energy into rotational energy that drives an electrical generator. A wind turbine typically consists of a tower, nacelle body, and a rotor with two or more blades.

### **3.0 General Requirements**

#### **3.1 Special Permit Granting Authority**

No wind facility over 60 kilowatts of rated nameplate capacity shall be erected, constructed, installed or modified as provided in this section without first obtaining a permit from the special permit granting authority. The construction of a wind facility shall be permitted in any zoning district subject to the issuance of a Special Permit and provided that the use complies with all requirements set forth in sections 3, 4, 5 and 6. All such wind energy facilities shall be constructed and operated in a manner that minimizes any adverse visual, safety, and environmental impacts. No special permit shall be granted unless the special permit granting authority finds in writing that:

- (a) the specific site is an appropriate location for such use, *and provides adequate wind conditions for economic energy production with a modern wind energy facility (RB)*;
- (b) the use is not expected to adversely affect the neighborhood;
- (c) there is not expected to be any serious hazard to pedestrians or vehicles from the use; *Abutters should be included as potentially exposed to hazards (RB)*
- (d) no nuisance is expected to be created by the use; and
- (e) adequate and appropriate facilities will be provided for the proper operation of the use.

Such permits may also impose reasonable conditions, safeguards and limitations on time and use and may require the applicant to implement all reasonable measures to mitigate unforeseen adverse impacts of the wind facility, should they occur.

Wind monitoring or meteorological towers shall be permitted in all zoning districts subject to issuance of a building permit for a temporary structure and subject to reasonable regulations concerning the bulk and height of structures and determining yard-size, lot area, setbacks, open space, parking, and building coverage requirements

#### **3.2 Compliance with Laws, Ordinances and Regulations**

The construction and operation of all such proposed wind facilities shall be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, environmental, electrical, communications and aviation requirements.

#### **3.3 Proof of Liability Insurance**

The applicant shall be required to provide evidence of liability insurance in an amount and for a duration sufficient to cover loss or damage to persons and structures occasioned by the failure of the facility. *I don't think this requirement has a place in zoning; building code applies (RB).*

#### **3.4 Site Control**

At the time of its application for a special permit, the applicant shall submit documentation of actual or prospective control of the project site sufficient to allow for installation and use of the proposed facility. Documentation shall also include proof of control over setback areas and access roads, if required. Control shall mean the legal authority to prevent the use or construction of any structure for human habitation within the setback areas.

## **4.0 General Siting Standards**

### **4.1 Height**

Wind facilities shall be no higher than 400 feet above the current grade of the land, provided that wind facilities may exceed 400 feet if:

- (a) the applicant demonstrates by substantial evidence that such height reflects industry standards for a similarly sited wind facility;
- (b) such excess height is necessary to prevent financial hardship to the applicant, and
- (c) the facility satisfies all other criteria for the granting of a special permit under the provisions of this section.

*Evaluate maximum height for Acton. Maximum cell tower height is 175 feet – probably too low for utility-scale wind power installations. Would Acton want to allow facilities so high that night lighting is required for air traffic safety? (RB)*

### **4.2 Setbacks**

Wind turbines shall be set back a distance equal to 1.5 times the overall blade tip height of the wind turbine from the nearest existing residential or commercial structure and 100 feet from the nearest property line and private or public way.

#### **4.2.1 Setback Waiver**

The special permit granting authority may reduce the minimum setback distance as appropriate based on site-specific considerations, if the project satisfies all other criteria for the granting of a special permit under the provisions of this section.

## **5.0 Design Standards**

### **5.1 Color and Finish**

The special permit granting authority shall have discretion over the turbine color, although a neutral, non-reflective exterior color designed to blend with the surrounding environment is encouraged.

### **5.2 Lighting and Signage**

#### **5.2.1 Lighting**

Wind turbines shall be lighted only if required by the Federal Aviation Administration. Lighting of other parts of the wind facility, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties.

#### **5.2.2 Signage**

Signs on the wind facility shall comply with the requirements of the town's sign regulations, and shall be limited to:

- (a) Those necessary to identify the owner, provide a 24-hour emergency contact phone number, and warn of any danger.
- (b) Educational signs providing information about the facility and the benefits of renewable energy.

### **5.2.3 Advertising**

Wind turbines shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the wind energy facility.

### **5.2.4 Utility Connections**

Reasonable efforts shall be made to locate utility connections from the wind facility underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. Electrical transformers for utility interconnections may be above ground if required by the utility provider.

## **5.3 Appurtenant Structures**

All appurtenant structures to such wind facilities shall be subject to reasonable regulations concerning the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements. All such appurtenant structures, including but not limited to, equipment shelters, storage facilities, transformers, and substations, shall be architecturally compatible with each other and shall be contained within the turbine tower whenever technically and economically feasible. Structures shall only be used for housing of equipment for this particular site. Whenever reasonable, structures should be shaded from view by vegetation and/or located in an underground vault and joined or clustered to avoid adverse visual impacts.

## **5.4 Support Towers**

Monopole towers are the preferred type of support for the Wind Facilities.

# **6.0 Safety, Aesthetic and Environmental Standards**

## **6.1 Emergency Services**

The applicant shall provide a copy of the project summary and site plan to the local emergency services entity, as designated by the special permit granting authority. Upon request the applicant shall cooperate with local emergency services in developing an emergency response plan.

### **6.1.1 Unauthorized Access**

Wind turbines or other structures part of a wind facility shall be designed to prevent unauthorized access.

## **6.2 Shadow/Flicker**

Wind facilities shall be sited in a manner that minimizes shadowing or flicker impacts. The applicant has the burden of proving that this effect does not have significant adverse impact on neighboring or adjacent uses through either siting or mitigation.

## **6.3 Noise**

The wind facility and associated equipment shall conform with the provisions of the Department of Environmental Protection's, Division of Air Quality Noise Regulations (310 CMR 7.10), unless the Department and the Special Permit Granting Authority agree that those provisions shall not be applicable. A source of sound will be considered to be violating these regulations if the source:

- (a) Increases the broadband sound level by more than 10 dB(A) above ambient, or
- (b) Produces a “pure tone” condition – when an octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.

These criteria are measured both at the property line and at the nearest inhabited residence. Ambient is defined as the background A-weighted sound level that is exceeded 90% of the time measured during equipment hours. The ambient may also be established by other means with consent from DEP. An analysis prepared by a qualified engineer shall be presented to demonstrate compliance with these noise standards.

The special permit granting authority, in consultation with the Department, shall determine whether such violations shall be measured at the property line or at the nearest inhabited residence.

*This is a bit ambiguous for zoning (RB).*

#### **6.4 Land Clearing, Soil Erosion and Habitat Impacts**

Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the wind facility and is otherwise prescribed by applicable laws, regulations, and ordinances.

### **7.0 Monitoring and Maintenance**

#### **7.1 Facility Conditions**

The applicant shall maintain the wind facility in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and integrity of security measures. Site access shall be maintained to a level acceptable to the local Fire Chief and Emergency Medical Services. The project owner shall be responsible for the cost of maintaining the wind facility and any access road, unless accepted as a public way, and the cost of repairing any damage occurring as a result of operation and construction.

#### **7.2 Modifications**

All material modifications to a wind facility made after issuance of the special permit shall require approval by the special permit granting authority as provided in this section.

### **8.0 Abandonment or Decommissioning**

#### **8.1 Removal Requirements**

Any wind facility which has reached the end of its useful life or has been abandoned shall be removed. When the wind facility is scheduled to be decommissioned, the applicant shall notify the town by certified mail of the proposed date of discontinued operations and plans for removal. The owner/operator shall physically remove the wind facility no more than 150 days after the date of discontinued operations. At the time of removal, the wind facility site shall be restored to the state it was in before the facility was constructed or any other legally authorized use. More specifically, decommissioning shall consist of:

- (a) Physical removal of all wind turbines, structures, equipment, security barriers and transmission lines from the site.
- (b) Disposal of all solid and hazardous waste in accordance with local and state waste disposal regulations.

- (c) Stabilization or re-vegetation of the site as necessary to minimize erosion. The special permit granting authority may allow the owner to leave landscaping or designated below-grade foundations in order to minimize erosion and disruption to vegetation.

## **8.2 Abandonment**

Absent notice of a proposed date of decommissioning, the facility shall be considered abandoned when the facility fails to operate for more than one year without the written consent of the special permit granting authority. The special permit granting authority shall determine in its decision what proportion of the facility is inoperable for the facility to be considered abandoned. If the applicant fails to remove the wind facility in accordance with the requirements of this section within 150 days of abandonment or the proposed date of decommissioning, the town shall have the authority to enter the property and physically remove the facility.

## **8.3 Financial Surety**

The special permit granting authority may require the applicant for utility scale wind facilities to provide a form of surety, either through escrow account, bond or otherwise, to cover the cost of removal in the event the town must remove the facility, of an amount and form determined to be reasonable by the special permit granting authority, but in no event to exceed more than 125 percent of the cost of removal and compliance with the additional requirements set forth herein, as determined by the applicant. Such surety will not be required for municipally or state-owned facilities. The applicant shall submit a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The amount shall include a mechanism for Cost of Living Adjustment.

*Need to evaluate if this is really needed (RB).*

## **9.0 Term of Special Permit**

A special permit issued for a wind facility shall be valid for 25 years, unless extended or renewed. The time period may be extended or the permit renewed by the special permit granting authority upon satisfactory operation of the facility. Request for renewal must be submitted at least 180 days prior to expiration of the special permit. Submitting a renewal request shall allow for continued operation of the facility until the special permit granting authority acts. At the end of that period (including extensions and renewals), the wind facility shall be removed as required by this section.

*Need to evaluate if this is really needed (RB).*

The applicant or facility owner shall maintain a phone number and identify a responsible person for the public to contact with inquiries and complaints throughout the life of the project.

## **10.0 Application Process & Requirements**

### **10.1 Application Procedures**

*Most of this section 10.1 is more appropriately placed in Rules and Regulations (RB).*

#### **10.1.1 General**

The application for a wind facility shall be filed in accordance with the rules and regulations of the special permit granting authority concerning special permits.

#### **10.1.2 Application**

Each application for a special permit shall be filed by the applicant with the city or town clerk pursuant to section 9 of chapter 40A of the Massachusetts General Laws.

## **10.2 Required Documents**

### **10.2.1 General**

The applicant shall provide the special permit granting authority with \_\_\_ copies of the application. All plans and maps shall be prepared, stamped and signed by a professional engineer licensed to practice in Massachusetts. Included in the application shall be:

### **10.2.2**

Name, address, phone number and signature of the applicant, as well as all co- applicants or property owners, if any.

### **10.2.3**

The name, contact information and signature of any agents representing the applicant.

### **10.2.4**

Documentation of the legal right to use the wind facility site, including the requirements set forth in 10.3.2(a) of this section

## **10.3 Siting and Design**

The applicant shall provide the special permit granting authority with a description of the property which shall include:

### **10.3.1 Location Map (*Modify for On-Site Wind Facilities*)**

Copy of a portion of the most recent USGS Quadrangle Map, at a scale of 1:25,000, showing the proposed facility site, including turbine sites, and the area within at least two miles from the facility. Zoning district designation for the subject parcel should be included; however a copy of a zoning map with the parcel identified is suitable.

*Add feasibility study as submission requirement (RB).*

### **10.3.2 Site Plan**

A one inch equals 200 feet plan of the proposed wind facility site, with contour intervals of no more than 10 feet, showing the following:

- (a) Property lines for the site parcel and adjacent parcels within 300 feet.
- (b) Outline of all existing buildings, including purpose (e.g. residence, garage, etc.) on site parcel and all adjacent parcels within 500 feet. Include distances from the wind facility to each building shown.
- (c) Location of all roads, public and private on the site parcel and adjacent parcels within 300 feet, and proposed roads or driveways, either temporary or permanent.
- (d) Existing areas of tree cover, including average height of trees, on the site parcel and adjacent parcels within 300 feet.
- (e) Proposed location and design of wind facility, including all turbines, ground equipment, appurtenant structures, transmission infrastructure, access, fencing, exterior lighting, etc.

(f) Location of viewpoints referenced below in 10.3.3 of this section.

### **10.3.3 Visualizations (*Modify for On-Site Wind Facilities*)**

The special permit granting authority shall select between three and six sight lines (*more if needed (RB)*), including from the nearest building with a view of the wind facility, for pre- and post-construction view representations. Sites for the view representations shall be selected from populated areas or public ways within a 2-mile radius of the wind facility. View representations shall have the following characteristics:

- (a) View representations shall be in color and shall include actual pre-construction photographs and accurate post-construction simulations of the height and breadth of the wind facility (e.g. superimpositions of the wind facility onto photographs of existing views).
- (b) All view representations will include existing, or proposed, buildings or tree coverage.
- (c) Include description of the technical procedures followed in producing the visualization (distances, angles, lens, etc...).

### **10.4 Landscape Plan (*Utility-Scale Wind Facilities Only*)**

A plan indicating all proposed changes to the landscape of the site, including temporary or permanent roads or driveways, grading, vegetation clearing and planting, exterior lighting, other than FAA lights, screening vegetation or structures. Lighting shall be designed to minimize glare on abutting properties and except as required by the FAA be directed downward with full cut-off fixtures to reduce light pollution.

### **10.5 Operation & Maintenance Plan**

The applicant shall submit a plan for maintenance of access roads and storm water controls, as well as general procedures for operational maintenance of the wind facility.

### **10.6 Compliance Documents**

If required under previous sections of this by-law, the applicant will provide with the application:

- (a) a description of financial surety that satisfies 8.3 of this section,
- (b) proof of liability insurance that satisfies Section 3.3 of this section,
- (c) certification of height approval from the FAA,
- (d) a statement that satisfies Section 6.3, listing existing and maximum projected noise levels from the wind facility.

### **10.7 Independent Consultants – (*Utility-Scale Wind Facilities Only*)**

Upon submission of an application for a special permit, the special permit granting authority will be authorized to hire outside consultants, pursuant to section 53G of chapter 44 of the Massachusetts General Laws. As necessary, the applicant may be required to pay not more than 50% of the consultant's costs.

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# **Model Amendment to a Zoning Ordinance or By-law: Small Wind Energy Systems**

Prepared by:

Massachusetts Division of Energy Resources

Massachusetts Executive Office of Energy and Environmental Affairs

[Note:

*Background on Model By-law Development: The Massachusetts Executive Office of Environmental Affairs [EOEEA] and the Division of Energy Resources [DOER] determined that creating model by-laws for small wind power development was an important step in advancing small wind development across the Commonwealth. These agencies, acting on behalf of the Commonwealth, were particularly motivated to create these by-laws for the following reasons:*

- *Massachusetts law and policies establish the need for renewable energy such as wind to ensure the long-term health, prosperity, and security of the people and environment of the Commonwealth.*
- *EOEEA and DOER have repeatedly endorsed the importance of wind energy in helping meet the Commonwealth's renewable energy goals and improve the reliability of electricity supply in the region through diversification of generation resources.*
- *DOER and EOEEA want to ensure that small wind power projects are sited in an environmentally sensitive manner, and believe that siting criteria can help achieve this objective.*
- *Numerous towns have contacted DOER and EOEEA seeking information and guidance that will enable them to evaluate small wind development.*
- *DOER and EOEEA believe that comprehensive, proactive public involvement in the wind power development process will not only help ensure a democratic outcome, but will ultimately result in a more expeditious and environmentally sensitive outcome.*

*The experience of wind development in Massachusetts indicates that municipal by-laws are one of the most significant barriers to small wind projects. This is due not so much to municipal governments being expressly opposed to small wind development, but because wind power, as a newly-emergent land use, is not typically included in existing zoning bylaws. In turn, numerous towns are attempting to change their by-laws to allow for appropriate wind development. The specific requirements imposed by these by-laws on the project proponent should allow for responsible siting of small wind power projects.*

*This Model By-Law was prepared to assist cities and towns in establishing reasonable standards for small wind power development. The by-law is developed as a model and is not intended for adoption without specific review by municipal counsel. EOEEA and DOER would like to acknowledge Paul Gay for much of the content found in this Model Amendment.]*

## **1.0 Purpose**

The purpose of this by-law is to provide criteria which will help a town evaluate a small wind project. The criteria will be utilized by building inspectors charged with issuing building permits for small wind energy systems. Any proposed non-conforming small wind energy systems will be addressed through a special permit process under the review of the special permit granting authority.

The small wind energy systems bylaw should provide cities and towns with a streamlined and efficient administrative permitting process to allow for responsibly sited small wind systems.

### 1.1 Applicability

This section applies to small wind systems no greater than 60 kilowatts of rated nameplate capacity proposed to be constructed after the effective date of this section. This by-law is not intended to cover roof-mounted, building-integrated, building-mounted or architectural wind systems; this by-law only covers stand-alone tower mounted systems.

*Should evaluate if 60 KW is the appropriate threshold for Acton for differentiation between utility-scale and small scale wind energy systems. KW capacity is a function of height and rotor size. The Massachusetts Technology Collaborative (<http://www.masstech.org/index.asp>) has posted the following helpful information about wind turbine sizing and capacity:*

#### Turbine Sizes and Capacities

Wind energy can be cost-competitive in diverse applications because systems can be sized to meet site-specific needs. Commercially available turbines range in capacity from 0.25 kW all the way up to 4.5 MW, a very large and visible machine. When operating at full power, the smallest and the largest wind generators can supply enough electricity to power a few light bulbs and thousands of homes, respectively.

The capacity of a turbine is determined largely by its rotor diameter. Present-day technology may be divided into three broad size ranges, briefly characterized below:

- **Residential:** rated capacity below 30 kW, rotor diameter of 4 to 43 ft, hub height of 60 to 120 ft.
- **Medium:** rated capacity between 30 and 500 kW, rotor diameter of 43 to 100 ft, hub height of 115 to 164 ft.
- **Commercial:** rated capacity between 500 kW and 4.5 MW, rotor diameter of 100 ft to more than 325 ft, hub height of 164 to more than 260 ft.

(RB).

## 2.0 Definitions

**Building Inspector:** The inspector of buildings, building commissioner or local inspector, or, if there are none in a town, the board of selectmen, or person or board designated by local ordinance or by-law charged with the enforcement of the zoning ordinance.

**Building Permit:** A building permit is a required approval of a project by a licensed building inspector which is consistent with the local, state and federal building codes. In addition, the permit must meet the criteria set forth under the local zoning by-laws regarding small wind energy systems.

**Height:** The height of a wind turbine measured from natural grade to the tip of the rotor blade at its highest point, or blade-tip height.

**Special Use Permit:** A permit provided by the special permitting authority for nonconforming small wind systems (e.g. a small wind system that does not meet the criteria for small wind systems set forth by the Building Inspector).

**Special Permit Granting Authority:** The special permit granting authority shall be the board of selectmen, city council, board of appeals, planning board, or zoning administrator as designated by zoning ordinance or by-law for the issuance of special permits, or by this section for the issuance of special permits to construct and operate small wind energy systems.

**Rated Nameplate Capacity:** The maximum rated output of electric power production equipment. This output is typically specified by the manufacturer with a “nameplate” on the equipment.

**Small Wind Energy System:** All equipment, machinery and structures utilized in connection with the conversion of wind to electricity. This includes, but is not limited to, storage, electrical collection and supply equipment, transformers, service and access roads, and one or more wind turbines, which has a rated nameplate capacity of 60 kW or less.

*Might consider differentiation between small systems for primarily residential power supply uses and medium systems for power supply for businesses and industries (RB).*

**Wind turbine:** A device that converts kinetic wind energy into rotational energy that drives an electrical generator. A wind turbine typically consists of a tower, nacelle body, and a rotor with two or more blades.

### 3.0 General Requirements

#### 3.1 Building Inspector Issued Permit

No small wind energy system shall be erected, constructed, installed or modified as provided in this section without first obtaining a building permit from a licensed building inspector. All such wind energy systems shall be constructed and operated in a manner that minimizes any adverse visual, safety, and environmental impacts.

Such permits may also impose reasonable conditions, safeguards and limitations on time and use and may require the applicant to implement all reasonable measures to mitigate unforeseen adverse impacts of the small wind energy system, should they occur.

*Building permits are issued under the authority of the State Building Code. This section 3.1 is somewhat superfluous (RB).*

#### 3.2 Permit Granting Authority

If the proposed small wind energy system does not satisfy the criteria of the building permit set forth under the adopted by-laws then the applicant must seek review and petition the Permit Granting Authority for a Special Use Permit. The Special Use Permit will provide for a variance from the prescribed by-law requirements. This variance from the building permit criteria will only be applicable to that specific non-conforming project.

*If a system does not meet building code no local special permit granting authority can override it. If there is special for small systems it should have different criteria and thresholds. Need to establish height limits. For instance, systems could be allowed by right up to a certain height, and higher systems could be subject to a special permit. SPGA should be the Planning Board (RB).*

#### 3.3 Compliance with Laws, Ordinances and Regulations

The construction and operation of all such proposed small wind energy systems shall be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, environmental, electrical, communications and FAA aviation requirements.

*If current local requirements were all met no special provisions for small wind energy system would be needed. Need to evaluate current local requirements including adequacy of current section 3.8.3.1 . Standard height limits for building and structures would be the hardest obstacle. Consider height limit for by-right installations; different by-right limits in different zoning districts; and special permit for anything higher than the by-right limits as in current section 3.8.3.1 (RB).*

### **3.4 Utility Notification**

No small wind energy system shall be installed until evidence has been given that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

### **3.5 Temporary Meteorological Towers (Met Towers)**

Met towers shall be permitted under the same standards as a small wind system, except that the requirements apply to a temporary structure. A permit for a temporary met tower shall be valid for a maximum of 3 years after which an extension may be granted.

*Met towers are equipped with instrumentation, which collect wind data at various heights to investigate suitable wind speeds for wind energy projects (RB).*

Wind monitoring shall be permitted in all zoning districts subject to issuance of a building permit for a temporary structure and subject to reasonable regulations concerning the bulk and height of structures and determining yard-size, lot area, setbacks, open space and building coverage requirements.

## **4 General Siting Standards**

### **4.1 Setbacks**

Wind turbines shall be set back a distance equal to the total height of the wind turbine from all inhabited structures, overhead utility lines, public road or right of way and at least 5 feet from property boundaries.

*Setbacks from property boundary should be increased (RB).*

#### **4.1.1 Setback Waiver**

The building inspector may reduce the minimum setback distance if written permission is granted by the entity with care and control over the affected asset.

*There is a need to establish a wind access easement, possibly though a special permit, especially for smaller wind power systems at lower height of the spectrum. Such easements would ensure continued access to wind with little turbulence for the installation (RB).*

## **5 Design Standards**

### **5.1 Appearance, Color and Finish**

The wind generator and tower shall remain painted or finished the non-reflective color or finish that was originally applied by the manufacturer, unless approved in the building permit.

### **5.2 Lighting and Signage**

### **5.2.1 Lighting**

Wind turbines shall be lighted only if required by the Federal Aviation Administration. Lighting of other parts of the small wind energy system, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties.

*Would Acton want to allow facilities so high that night lighting is required for air traffic safety? (RB)*

### **5.2.2 Signage and Advertising**

Signs and advertising shall be restricted to reasonable identification of the manufacturer or operator of the small wind energy facility and shall defer to the requirements of the town sign regulations.

## **6 Safety, Aesthetic and Environmental Standards**

### **6.1 Unauthorized Access**

Wind turbines or other structures part of a small wind energy system shall be designed to prevent unauthorized access. For instance, the tower shall be designed and installed so as to not provide step bolts or a ladder readily accessible to the public for a minimum height of 8 feet above the ground.

### **6.2 Noise**

The small wind energy system and associated equipment shall conform with the provisions of the Department of Environmental Protection's, Division of Air Quality Noise Regulations (310 CMR 7.10), unless the Department and the Permit Granting Authority agree that those provisions shall not be applicable.

### **6.3 Land Clearing, Soil Erosion and Habitat Impacts**

Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the small wind energy system and is otherwise prescribed by applicable laws, regulations, and ordinances.

## **7 Monitoring and Maintenance**

### **7.1 System Conditions**

The applicant shall maintain the small wind energy system in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and security measures.

## **8 Abandonment or Decommissioning**

### **8.1 Removal Requirements**

Any small wind energy system which has reached the end of its useful life or has been abandoned shall be removed.

A small wind energy system shall be considered abandoned when it fails to operate for one year. Upon a Notice of Abandonment issued by the Building Inspector, the small wind energy system owner will have 30 days to provide sufficient evidence that the system has not been abandoned or the town shall have the authority to enter the owner's property and remove the system at the owner's expense.

## **9.1 Permit Requirements**

### **9.1.1 Building Permit**

A building permit shall be required for the installation of a small wind energy system. This section is redundant with 3.1.

***Building permit is a given requirement under the MA Building Code. No need to state it here (RB).***

### **9.1.2 Documents**

The building permit application shall be accompanied by deliverables including the following:

- (a) A plot plan showing:
  - (i) Property lines and physical dimensions of the subject property within 2 times the total height from the tower location;
  - (ii) Location, dimensions, and types of existing major structures on the property;
  - (iii) Location of the proposed wind system tower, foundations, guy anchors and associated equipment;
  - (iv) The right-of-way of any public road that is contiguous with the property;
  - (v) Any overhead utility lines.
- (b) Wind system specifications, including manufacturer and model, rotor diameter, tower height, tower type (freestanding or guyed).
- (c) Tower foundation blueprints or drawings signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts.
- (d) Tower blueprint or drawing signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts.

### **9.1.3 Fees**

The application for a building permit for a small wind energy system must be accompanied by the fee required for a building permit for a Permitted Accessory Use.

### **9.1.4 Expiration**

A permit issued pursuant to this ordinance shall expire if:

- (a) The small wind energy system is not installed and functioning within 24-months from the date the permit is issued; or,
- (b) The small wind energy system is abandoned.

## **9.2 Violations**

It is unlawful for any person to construct, install, or operate a small wind energy system that is not in compliance with this ordinance or with any condition contained in a building permit issued pursuant to this ordinance. Small wind energy systems installed prior to the adoption of this ordinance are exempt.

## **9.3 Administration and Enforcement**

(a) This ordinance shall be administered and enforced by the Building Inspector or other official as designated. (b) The Building Inspector may enter any property for which a building permit has been

issued under this ordinance to conduct an inspection to determine whether the conditions stated in the permit have been met.

#### 9.4 Penalties

Any person who fails to comply with any provision of this ordinance or a building permit issued pursuant to this ordinance shall be subject to enforcement and penalties as allowed by applicable law.

10 Severability
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The provisions of this ordinance are severable, and the invalidity of any section, subdivision, paragraph, or other part of this ordinance shall not affect the validity or effectiveness of the remainder of the ordinance.

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### SUMMARY

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Direct inquiries to: Roland Bartl, AICP, Planning Director: [planning@acton-ma.gov](mailto:planning@acton-ma.gov) / (978) 264-9636

Selectman assigned: : [bos@acton-ma.gov](mailto:bos@acton-ma.gov)

<b>Recommendations:</b>	<b><u>Board of Selectmen</u></b> <b>Recommended</b>	<b><u>Finance Committee</u></b> <b>Deferred</b>	<b><u>Planning Board</u></b> <b>Recommended</b>
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